$$x(n) = \frac{1}{N} \sum_{K=0}^{N-1} X(K) \; e^{j\frac{2\pi nK}{N}}$$

$$W_N^{-Kn} = \left[\; . \; \right]_{N*N}$$

$$W_4^{-Kn} = \begin{bmatrix} 1 & 1 & 1 & 1 \\ 1 & +j & -1 & -j \\ 1 & -1 & 1 & -1 \\ 1 & -j & -1 & +j \end{bmatrix}$$

EX $X(K) = \{6, 1-j, 0, 1+j\}$

① $N = 4$

② W_4^{-Kn}

$$x(n) = \frac{1}{N} W_4^{-Kn} \; X(K)$$

$$x(n) = \frac{1}{4}\begin{bmatrix} 1 & -1 & 1 & 1 \\ 1 & +j & -1 & -j \\ 1 & -1 & 1 & -1 \\ 1 & -j & -1 & +j \end{bmatrix}\begin{bmatrix} 6 \\ 1-j \\ 0 \\ 1+j \end{bmatrix} = \begin{bmatrix} 2 \\ 2 \\ 1 \\ 1 \end{bmatrix}$$